

Network topology discovery

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Because of the cheap price and high capacity of Ethernet switches, Ethernet technology is conquering the backbone and access networks. It is now an accepted design pattern in network engineering to use VLAN-s not only in access and distribution but in the backbone layer too. As the Ethernet started its career as a LAN technology, it does not have OAM (Operation, Administration, and Maintenance) capabilities comparable to SDH, ATM or MPLS. So it is not surprising that it does not have support for error handling and signalling comparable to ICMP. For the network providers and system administrators knowledge of the actual and the past topology of a network is the most important thing. As current Ethernet technology does not provide special tools for topology maintenance and discovery there are several special methods available in the literature that can be used for discovering the actual Layer 2 topology of a network. In this article we will summarize the best known Layer 2 topology discovery methods and we will compare them on the basis of the complexity, the amount of the information needed and the resolution provided. A novel CAM table-based approach will be shown and compared with existing technologies.

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